This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of transmitting packets over an Internet Protocol (IP) or Ethernet packet-switched network, comprising the steps of:

(1) transmitting a plurality of test packets over the network during a plurality of different time slots, wherein each test packet has a priority level that is lower than a priority level assigned to data packets that are to be transmitted between endpoints on the network, and wherein the test packets are transmitted so as to emulate data packets that are to be transmitted between the endpoints on the network;

(2) on the basis of step (1), evaluating which of the plurality of different time slots corresponds to favorable network traffic conditions; and

(3) transmitting data packets over the network at a priority level higher than the test packets using one or more favorable time slots evaluated in step (2).

2. (Canceled) ~~The method of claim 1, wherein step (1) comprises the step of transmitting the plurality of test packets using a lower priority level than is used to transmit data packets in step (3).~~

3. (Original) The method of claim 1, wherein step (2) comprises the step of evaluating packet latencies associated with the test packets.

4. (Original) The method of claim 1, wherein step (2) comprises the step of evaluating dropped packet rates associated with the test packets.

5. (Original) The method of claim 1, wherein step (1) comprises the step of transmitting the test packets at a data rate corresponding to an expected connection bandwidth.

6. (Currently Amended) The method of claim 1, wherein step (2) comprises the step of a network endpoint ~~transmitting node~~ performing an evaluation of packet statistics ~~latencies and dropped packet rates~~ associated with the test packets transmitted over the plurality of different time slots.

7. (Currently Amended) The method of claim 1, wherein step (2) comprises the step of a a network endpoint ~~receiving node~~ performing an evaluation of latencies and dropped packet rates associated with the test packets transmitted over the plurality of different time slots.

8. (Original) The method of claim 1, wherein the test packets and the data packets

comprise Internet Protocol (IP) packets transmitted over a packet-switched network.

9. (Original) The method of claim 8, wherein the IP packets are scheduled for transmission within time slots within a frame that is synchronized to a clock.

10. (Original) The method of claim 1, wherein the test packets are transmitted at a priority level that is lower than the data packets in step (3), but higher than other data packets containing other data transmitted on the network.

11. (Original) The method of claim 1, wherein the data packets comprise voice data.

12. (Original) The method of claim 1, further comprising the step of repeating steps (1) through (3) for each side of a two-way connection between two endpoints ~~nodes~~ in the network.

13. (Original) The method of claim 1, wherein the network is a packet-switched network comprising packet switches that maintain packet queues.

14. (Original) The method of claim 13, wherein each packet switch comprises at least two packet queues, a higher-priority queue for transmitting the data packets of step (3) and a lower-priority queue for transmitting the test packets of step (1).

15. (Currently Amended) In an Internet Protocol (IP) or Ethernet network comprising a plurality of packet switches, a method of transmitting data packets, comprising the steps of:

(1) establishing a time reference frame comprising a plurality of time slots during which ~~IP~~ packets are to be transmitted across the ~~IP~~ network between two network endpoints;

(2) from a first network endpoint ~~transmitting node~~, empirically determining which of the plurality of time slots is associated with a reduced level ~~rate~~ of packet contention ~~congestion~~ with respect to an intended second network endpoint ~~recipient node~~; and

(3) synchronously transmitting a plurality of data packets from the first network endpoint ~~transmitting node~~ to the second network endpoint ~~intended recipient node~~ during one or more time slots empirically determined to be associated with the reduced level ~~rate~~ of packet contention ~~congestion~~ in step (2).

16. (Currently Amended) The method of claim 15, wherein step (2) comprises the step of transmitting a plurality of test packets during a plurality of different time slots from the first network endpoint ~~transmitting node~~ to the second network endpoint ~~intended recipient node~~.

17. (Original) The method of claim 16, wherein step (2) comprises the step of transmitting the test packets using a packet priority level lower than a packet priority level used to transmit the plurality of data packets in step (3).

18. (Original) The method of claim 17, wherein step (2) comprises the step of transmitting test packets at a data rate sufficient to support a desired bandwidth in step (3).

19. (Currently Amended) An apparatus ~~computer~~ having a network interface and programmed with computer-executable instructions that, when executed, perform the steps of:

(1) transmitting a plurality of test packets at a first priority level over a network to which the apparatus ~~computer~~ is connected during a plurality of different time slots, wherein the test packets are transmitted at a data rate that emulates data packets that are to be transmitted between endpoints on the network;

(2) on the basis of step (1), evaluating which of the plurality of different time slots corresponds to favorable network traffic conditions; and

(3) transmitting data packets over the network at a second priority level using one or more favorable time slots evaluated in step (2), wherein the second priority level is higher than the first priority level.

20. (Currently Amended) The apparatus ~~computer~~ of claim 19, wherein the computer-executable instructions further perform the step of evaluating packet latencies of the plurality of test packets with a second apparatus ~~computer~~ connected to the network.

21. (New) The method of claim 1, wherein step (2) comprises the step of transmitting the test packets at a data rate that exceeds an expected data rate for packets that are to be transmitted between two network endpoints on the network.

22. (New) The method of claim 15, wherein the reduced level of packet contention corresponds to zero contention.

23. (New) The apparatus of claim 19, wherein step (2) comprises the step of evaluating packet statistics associated with the test packets.

24. (New) The apparatus of claim 23, wherein the packet statistics comprise a dropped packet rate.

25. (New) The apparatus of claim 23, wherein the packet statistics comprise packet latencies.

26. (New) The apparatus of claim 19, wherein the test packets and the data packets comprise Internet Protocol (IP) packets transmitted over a packet-switched network.

27. (New) The apparatus of claim 26, wherein the IP packets are scheduled for transmission within time slots within a frame that is synchronized to a clock.

28. (New) The apparatus of claim 19, wherein the test packets are transmitted at a priority level that is lower than the data packets in step (3), but higher than other data packets containing other data transmitted on the network.

29. (New) The apparatus of claim 19, wherein the data packets comprise voice data.

30. (New) The apparatus of claim 19, wherein the network is a packet-switched network comprising packet switches that maintain packet queues.

31. (New) A system comprising at least three network endpoints that contend for resources in a shared packet switch, each endpoint comprising a processor programmed with computer-executable instructions that, when executed, perform steps including:

(1) transmitting a plurality of test packets over the network during a plurality of different time slots, wherein each test packet has a priority level that is lower than a priority level assigned to data packets that are to be transmitted between endpoints on the network, and wherein the test packets are transmitted so as to emulate data packets that are to be transmitted between the endpoints on the network;

(2) on the basis of step (1), evaluating which of the plurality of different time slots corresponds to favorable network traffic conditions; and

(3) synchronously transmitting data packets over the network using one or more favorable time slots evaluated in step (2).

32. (New) The system of claim 31, wherein the processor is further programmed to perform steps including:

evaluating packet statistics corresponding to the test packets transmitted as part of step (2).

33. (New) The method of claim 1, wherein the data packets comprise video data.

34. (New) The method of claim 1, wherein the data packets comprise time-division multiplex (TDM) data converted into IP packets.

35. (New) The apparatus of claim 19, wherein the data packets comprise video data.

36. (New) The apparatus of claim 19, wherein the data packets comprise time-division multiplex (TDM) data converted into IP packets.

37. (New) A method of transmitting packets over an Internet Protocol (IP) network comprising a plurality of network switches, comprising:

(1) establishing a time reference frame comprising a plurality of time slots corresponding to candidate times during which packets may be transmitted between network endpoints on the network;

(2) transmitting over a plurality of the time slots a plurality of test packets from a first endpoint on the IP network to a second endpoint on the IP network, wherein the plurality of test packets are transmitted at a first priority level and are transmitted at a data rate corresponding to an expected rate to be experienced during a subsequent communication between the first and second endpoints on the IP network,

(3) evaluating, at one of the first and second endpoints, packet statistics for the test packets, wherein the packet statistics are indicative of contention conditions in one or more of the plurality of network switches,

(4) identifying one or more time slots that correspond to a low level of contention conditions; and

(5) synchronously transmitting based on the time reference frame a plurality of data packets comprising one or more of voice data, video data, and TDM-over-IP data during the one or more of the time slots identified in step (4) that correspond to the low level of contention conditions in the one or more network switches, wherein the data packets are transmitted at a priority level higher than the first priority level of the test packets.